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| 10/775,488 | 02/09/2004 | Sam Nemazie | SiliconStor-01US | 1503 |
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| LAW OFFICES OF IMAM 111 N. MARKET STREET, SUITE 1010 SAN JOSE, CA 95113 | | | LEE, CHUN KUAN | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|---|-------------------------------------|--|
| Office Action Summary | Application No. 10/775,488 | Applicant(s) NEMAZIE, SAM | |
| | Examiner Chun-Kuan (Mike) Lee | Art Unit 2181 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-7,9-21,24-26 and 28-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-7,9-21,24-26 and 28-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>03/14/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

RESPONSE TO ARGUMENTS

1. Applicant's arguments filed 06/06/2007 have been fully considered but they are not persuasive. Currently, claims 2-3, 8, 22-23 and 27 are canceled and claims 1, 4-7, 9-21, 24-26 and 28-43 are pending for examination.
2. In response to applicant's arguments, on page 9, 2nd paragraph and page 10, last paragraph to page 11, 1st paragraph, regarding the independent claims 1, 20 and 33 rejected under 35 U.S.C. 103(a) that the references are nonanalogous because the differences in technology between Grieff and Utsunomiya would require re-designing as Grieff is associated with the implementation of serial ATA (SATA) and Utsunomiya is associated with the implementation of parallel ATA (PATA); applicant's arguments have fully been considered, but are not found to be persuasive.

Please note that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

In this case, Grieff and Utsunomiya are analogous art not only because both references are in the field of applicant's endeavor as both are associated with ATA standard technology, wherein Grieff is utilizing SATA and Utsunomiya is utilizing PATA,

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and it is well known to one skilled in the art that SATA is the result of technology advancement in PATA. Furthermore, both references are reasonably pertinent to the particular problem with which the applicant was concerned (i.e. implementing a SATA switch to connect to a plurality of hosts to a peripheral device, wherein the SATA switch comprises the task file queues in order for the plurality of hosts to concurrently access a peripheral device by having the SATA switch accepting commands from the plurality of hosts at any given time as the plurality commands are respectively queued into the respective task file queue), wherein Grieff teaches the implementation of a SATA switch for connecting a plurality of hosts to a peripheral device (Grieff, Fig. 1), and Utsunomiya teaches the implementation of a task file queue, wherein the task file queue enables a host to issue a plurality of commands to a peripheral at the same time even when the peripheral is busy (i.e. at any given time) (Utsunomiya, [0005]-[0008] and [0020]-[0024]).

3. In response to applicant's arguments, on page 9, last paragraph to page 10, 2nd paragraph, regarding the independent claims 1, 20 and 33 rejected under 35 U.S.C. 103(a) that the combination of references does not teach/suggest every claimed limitation because arbitration is needed and the receiving of commands from the two hosts at any given time can not be achieved, which is resulted from the applicant's assumption that in order to prevent the re-designing of Grieff, Utsunomiya's task file queue should be placed into Grieff's decoder 120; applicant's arguments have fully been considered, but are not found to be persuasive.

The examiner does not agree with applicant's arguments, because if the combination of references were to be implemented in accordance to applicant's assumption above, re-designing to a certain degree would still be needed in order to integrate the two technology between SATA and PATA (which is applicant appears to agree starting at the bottom of page 9 in applicant's arguments), therefore the examiner is not fully clear with regard to what the applicant is arguing.

4. In response to applicant's arguments, on page 10, 3rd paragraph, regarding the independent claims 1, 20 and 33 rejected under 35 U.S.C. 103(a) that Utsunomiy does not teach multiple host access; applicant's arguments have fully been considered, but are not found to be persuasive.

Please note that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, the multiple host access is disclosed by Grieff (Grieff, Figure 1).

5. As per claims 4-7, 9-19, 21, 24-26, 28-32 and 34-43, dependent claims 4-7, 9-19, 21, 24-26, 28-32 and 34-43 are unpatentable at least due to direct or indirect dependency on the rejected independent claims 1, 20 and 33.

6. In responding to all applicant's arguments, the examiner will maintain his position and the current rejection of record.

I. INFORMATION CONCERNING OATH/DECLARATION

Oath/Declaration

7. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in **37 C.F.R. 1.63**.

II. INFORMATION CONCERNING DRAWINGS

Drawings

8. The applicant's drawings submitted are acceptable for examination purposes.

III. ACKNOWLEDGEMENT OF REFERENCES CITED BY APPLICANT

9. As required by **M.P.E.P. 609(C)**, the applicant's submissions of the Information Disclosure Statement dated March 14, 2007 is acknowledged by the examiner and the cited references have been considered in the examination of the claims now pending. As required by **M.P.E.P 609 C(2)**, a copy of the PTOL-1449 initialed and dated by the examiner is attached to the instant office action.

IV. REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 4, 6-7, 9-14, 20-21, 24-26 and 28-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grieff et al. (US Patent 6,961,813) in view of Utsunomiya et al. (US Pub.: 2003/0131166).

11. As per claims 1, 20 and 33, Grieff teaches a switch coupled between a plurality of host units, a device for communicating there between and a method comprising:

a) a first serial advanced technology attachment (ATA) port (Fig. 1, ref. 130) connection to a first host unit, for causing access, by the first host unit, to the device (col. 3, ll. 13-24 and col. 5, l. 17 to col. 7, l. 6);

b) a second serial ATA port (Fig. 1, ref. 132) connection to a second host unit, for causing access, by the second host unit, to the device (col. 3, ll. 13-24 and col. 5, l. 17 to col. 7, l. 6);

c) a third serial ATA port (device-side link layer on Fig. 1) connection to a device (e.g. serial ATA device), for causing access, by the first or second host unit, to the device (col. 3, ll. 13-24 and col. 5, l. 17 to col. 7, l. 6);

d) an arbitration and control circuit (arbiter module 112 and of Fig. 1), coupled to the first, second and third port, for selecting either the first host unit or the second host

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unit to be coupled to the device, through the switch (col. 3, ll. 13-24 and col. 5, l. 17 to col. 7, l. 6);

wherein the switch enable multiple hosts to share access to the device (e.g. single ATA device) (col. 3, ll. 14-16), such that the device can maintain communication with the multiple hosts (col. 3, ll. 43-45); and

wherein the switch includes a buffer that allows the first host to post a single, non-queue command if the second host currently has outstanding queued commands (col. 5, ll. 36-39).

Grieff does not expressly teach the switch coupled between the plurality of host units, the device for communicating there between and the method comprising:

wherein the first serial ATA port includes a first host task file responsive to commands sent by the first host unit;

wherein the second serial ATA port includes a second host task file responsive to commands sent by the second host unit;

selecting one of the first host or the second host units to concurrently access the device by accepting commands, through the first and the second task files, from either of the first or the second host units, at any given time, including when the device is not in an idle state.

Utsunomiya teaches a system and a method comprising:

a host computer issuing a plurality of commands to the drive apparatus (Fig. 3, ref. 12) at the same time (e.g. concurrently), wherein the drive apparatus operates in accordance to ATA ([0004] and [0007]);

a command queue including a task file queue enabling the host computer to issue the plurality of commands to be processed by the drive apparatus at the same time (e.g. concurrently), as the task file queue storing the plurality of commands ([0005]-[0008] and [0020]-[0024]), therefore the task file queue would enable the host computer to issue the plurality of commands, at any given time, even when the drive apparatus is in a busy status ([0005]); and

wherein the plurality of commands issued by the host computer are transferred from the task file queue to the drive apparatus' task file (Fig. 5 and [0022]).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Utsunomiya's task file queue into Grieff's ATA ports for the benefit of decreasing the work load of the host unit for issuing commands (Utsunomiya, [0009]) to obtain the invention as specified in claims 1, 20 and 33. The resulting combination of the references further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising:

wherein the first serial ATA port includes the first task file queue (i.e. first host task file) storing the plurality of commands issued and sent by the first host unit;

wherein the second serial ATA port includes the second task file queue (i.e. second host task file) storing the plurality of commands issued and sent by the second host unit; and

wherein the switch selects either the first host unit or the second host unit to concurrently access the drive apparatus (i.e. device) as the switch receives and accepts

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the plurality of commands, issued by either the first host unit or the second host unit, at any give time, including when the device is in the busy status (i.e. not in an idle state), as the plurality of commands are respectively stored into the first task file queue and the second task file queue.

12. As per claims 4 and 24, Grieff and Utsunomiya teach all the limitations of claims 1 and 20, where Utsunomiya further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein said third serial ATA port includes a device task file (Utsunomiya, Fig. 5 and [0022]).

13. As per claims 6 and 25, Grieff and Utsunomiya teach all the limitations of claims 1 and 20 as discussed above, where Grieff further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein said device is a storage unit (disk drive) (Grieff, col. 2, ll. 53-60).

14. As per claims 7 and 26, Grieff and Utsunomiya teach all the limitations of claims 1 and 20 as discussed above, where Grieff further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein said switch employed an enterprise system (Grieff, col. 4, ll. 13-16).

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15. As per claims 9, 28 and 34, Grieff and Utsunomiya teach all the limitations of claims 1, 20 and 33 as discussed above, where Grieff further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein information, in the form of data, commands or setup, is transferred from the device to the first or second host units through the switch and the information is modified by the switch prior to being received by the first or second host units such that modified information rather than the information is received by the first or second host units (Grieff, col. 12, l. 60 to col. 28).

16. As per claims 10, 30 and 35, Grieff and Utsunomiya teach all the limitations of claims 9, 28 and 34 as discussed above, where Grieff further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein the information is referred to as `identify drive response` (i.e. IDENTIFY DEVICE) (Grieff, col. 7, ll. 39-61).

17. As per claims 11, 29 and 36, Grieff and Utsunomiya teach all the limitations of claims 9, 28 and 34 as discussed above, where Grieff further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein the information is referred to as `Tag` (Grieff, col. 12, l. 60 to col. 14, l. 28).

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18. As per claims 12, 31 and 37, Grieff and Utsunomiya teach all the limitations of claims 1, 20 and 34 as discussed above, where Grieff further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein information, in the form of data, commands or setup, is transferred from the first or second host units to the device through the switch and the information is modified by the switch prior to being received by the device such that modified information rather than the information is received by the device (Grieff, col. 5, l. 65 to col. 6, l. 56 and col. 10, l. 27 to col. 11, l. 36).

19. As per claims 13, 32 and 38, Grieff and Utsunomiya teach all the limitation sof claims 12, 31 and 37 as discussed above, where Grieff further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein the information is referred to as 'Tag' (Grieff, col. 5, l. 65 to col. 6, l. 56 and col. 10, l. 27 to col. 11, l. 36).

20. As per claims 14 and 39, Grieff and Utsunomiya teach all the limitations of claims 12 and 37 as discussed above, where Grieff further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein the arbitration and control circuit include a Tag/Sactive Mapping Circuit (Grieff, Command Tracker SM 114 of Fig. 1) for mapping a host tag to a device tag and inverse mapping for identifying a host (Grieff, col. 5, l. 65 to col. 6, l. 56; col. 10, l. 27 to col. 11, l. 36 and col. 12, l. 60 to col. 14, l. 28).

21. As per claim 21, Grieff and Utsunomiya teach all the limitations of claims 12 and 37 as discussed above, where Grieff further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein the switch is a serial ATA switch (Grieff, col. 3, l. 13 to col. 4, l. 4 and col. 5, l. 65 to col. 6, l. 56).

22. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grieff et al. (US Patent 6,961,813) in view of Utsunomiya et al. (US Pub.: 2003/0131166) as applied to claims 1, 4, 6-7, 9-14, 20-21, 24-26 and 28-39 above, and further in view of Boucher et al. (US Patent 6,434,620).

Grieff and Utsunomiya teach all the limitations of claim 1, where Utsunomiya further teaches the switch coupled between the plurality of host units, the device for communicating there between and the method comprising wherein said first, second and third ports include the corresponding task file queue (Utsunomiya, Fig. 4-5 and [0020]-[0024]).

Grieff and Utsunomiya does not expressly teach the switch comprising wherein said first, second and third ports are level 4 ports.

Boucher teaches a communication interface between a peripheral comprising the intelligent network interface card (INIC 50 of Fig. 1) and a host (Fig. 1, ref. 52) comprising a physical layer communication path (Fig. 1, ref. 57) and two other

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communication paths at higher communication layer (Fig. 1 and col. 6, l. 60 to col. 7, l. 10).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Boucher's higher layer communication path into Grieff and Utsunomiya's switch for the benefit of providing a faster communication path between the peripheral device and the host (Boucher, Fig. 1) to obtain the invention as specified in claim 5. The resulting combination of the references teaches the switch further comprising the ports, interconnection between the hosts and the peripheral device, operating at level 4, as it is well known to one skilled in the art that the highest communication layer for SATA is application layer (level 4).

23. Claims 15-18 and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grieff et al. (US Patent 6,961,813) in view of Utsunomiya et al. (US Pub.: 2003/0131166) as applied to claims 1, 4, 6-7, 9-14, 20-21, 24-26 and 28-39 above, and further in view of "Serial ATA Specification".

24. As per claims 15-16 and 40-41, Grieff and Utsunomiya teach all the limitations of claims 1 and 34 as discussed above.

Grieff and Utsunomiya does not expressly teach the switch and the method comprising wherein either the first or the second host sends a legacy queue command queued by the device; and wherein either the first or the second host sends a native queue command for execution thereof by the device.

"Serial ATA Specification" teaches the utilization of the legacy ATA queuing (legacy queue command) and the native Serial ATA queuing (native queue command) by the Serial ATA device (Section D.1.5 on page 301).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Serial ATA Specification's queuing of legacy queuing command and the execution of the native queuing command into Grieff and Utsunomiya storage device because Grieff and Utsunomiya's storage device conforms to the Serial ATA standard, therefore it would be beneficial to comply with the SATA standard in order to enable proper technological functioning in accordance with the SATA standard to obtain the invention as specified in claims 15-16 and 40-41.

25. As per claims 17 and 42, Grieff, Utsunomiya and "Serial ATA Specification" teach all the limitations of claims 16 and 41 as discussed above, where Grieff further teaches the switch and the method comprising wherein the Tag in the native queue command is modified prior to sending to the Device to avoid using the same Tag for both hosts and not to exceed the maximum allowed Tag value (Grieff, col. 5, l. 65 to col. 6, l. 56 and col. 10, l. 27 to col. 11, l. 36), wherein the maximum number tag is directly related to the free space available on the Outstanding Requests Table (OR_Table).

26. As per claims 18 and 43, Grieff, Utsunomiya and "Serial ATA Specification" teach all the limitations of claims 17 and 42 as discussed above, where Grieff further teaches the switch and the method comprising wherein the Tag received in a FIS from the

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Device is modified to its original value prior to sending the same to the Host (Grieff, col. 5, l. 65 to col. 6, l. 56; col. 10, l. 27 to col. 11, l. 36 and col. 12, l. 60 to col. 14, l. 28).

27. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grieff et al. (US Patent 6,961,813) in view of Utsunomiya et al. (US Pub.: 2003/0131166) as applied to claims 1, 4, 6-7, 9-14, 20-21, 24-26 and 28-39 above, and further in view of Shin et al. (US Patent 7,154,905).

Grieff and Utsunomiya teaches all the limitations of claim 1 as discussed above, where Grieff further teaches the switch comprising a Data FIS FIFO (Grieff, host FIS buffer 120 and device FIS buffer 122 of Fig. 1) and an associated FIFO Control (Grieff, Command Tracker SM 114 of Fig. 1) are coupled to the first, second and third ports and are located externally thereto (Grieff, Fig. 1 and col. 5, l. 65 to col. 6, l. 56).

Grieff and Utsunomiya does not expressly teach the switch comprising wherein the first, second and third ports are level 3 serial ATA ports.

Shin teaches the utilization of a port including a transport layer (i.e. level 3 serial ATA port) (Fig. 1; Fig. 38A and col. 2, ll. 26-44).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Shin's transport layer into Grieff, "SATA vs. PATA: the reality of Serial and Parallel ATA - Serial ATA" and Utsunomiya's ATA ports for the benefit of providing a communication architecture that provides high-performance for applications at a low cost (Shin, col. 4, ll. 25-30) to obtain the invention as specified in claim 19. The resulting combination of the references teaches the switch coupled

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between the plurality of host units, further comprising wherein the first, second and third ports are level 3 serial ATA ports.

V. CLOSING COMMENTS

Conclusion

a. STATUS OF CLAIMS IN THE APPLICATION

The following is a summary of the treatment and status of all claims in the application as recommended by M.P.E.P. 707.07(i):

a(1) CLAIMS REJECTED IN THE APPLICATION

Per the instant office action, claims 1, 4-7, 9-21, 24-26 and 28-43 have received a final action on the merits. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

b. DIRECTION OF FUTURE CORRESPONDENCES

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671. The examiner can normally be reached on 8AM to 5PM.

IMPORTANT NOTE

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on (571) 272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

November 27, 2007

Chun-Kuan (Mike) Lee
Examiner
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A handwritten signature in black ink, appearing to read 'Alford Kindred', is positioned above the printed name.

**ALFORD KINDRED
SUPERVISORY PATENT EXAMINER**